at considerable risk of sudden death when additional CAD is present, 6) the timing of surgery in AS depends not only on hemodynamic severity, but also on symptoms and presence of CAD.

942-45 Mitral Regurgitation and Left Atrial Thrombus in Rheumatic Mitral Valve Disease: A Clinicopathologic Study

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A total of 255 consecutive patients with rheumatic mitral valve disease, scheduled for surgery, were studied preoperatively by transthoracic echocardiography. Data were analyzed to determine the relationship between mitral regurgitation (MR) and left atrial thrombus (LAT) found at surgery. The mean age of our patients was 34 ± 11 years. Female to male ratio was 1.5/1. A LAT was found in 77 patients (30%). There were 30 with mild, 33 with moderate, and 17 with severe MR. Atrial fibrillation was found in 155 patients (59%). MR had an inverse relationship to LAT with the prevalence of the latter as follows: 37%, 33%, 9% and 0% in none, mild, moderate, and severe MR respectively ($p < 0.0001$). In atrial fibrillation, the prevalence of LAT in patients with predominant MR was 8.3% versus 54% in patients with predominant mitral stenosis ($p < 0.0001$). When MR was severe with atrial fibrillation (13 cases), LAT was not found whatsoever. In sinus rhythm, the prevalence of LAT was 0% in predominant MR and 14.5% in patients with predominant mitral stenosis ($p < 0.0001$). When in sinus rhythm, LAT was absent in 14 patients with moderate or severe MR.

Conclusion: Prophylactic anticoagulation of symptomatic rheumatic mitral valve disease patients (requiring surgery) with predominant MR is not likely to be beneficial when MR is severe in atrial fibrillation; and when MR is moderate or severe in sinus rhythm.

943 Atrial Flutter

Tuesday, March 21, 1995, 9:00 a.m.–11:00 a.m.
Ernest N. Morial Convention Center, Hall E
Presentation Hour: 10:00 a.m.–11:00 a.m.

943-8 Does Radiofrequency Ablation of the Medial Isthmus for Atrial Flutter Modify AV Nodal Function?

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Ablation of atrial flutter has been shown to be safe and effective, but little is known about the effect of the ablation procedure on AV nodal function. In 28 patients (21 males, mean 55 ± 14 yo, 13 with coronary artery disease) who underwent successful ablation of typical atrial flutter, including 19 (68%) also presenting with atypical flutter, retrograde and antegrade AV nodal function were measured before and after the procedure. RF ablation was achieved by applying linear lesions across the medial isthmus of the right atrium from the tricuspid annulus to coronary sinus ostium and then to the inferior vena cava ostium. Additional linear lesions were also made across the middle portion of the isthmus from the tricuspid annulus to the inferior vena cava ostium. This ablation approach should effectively isolate the posterior input generated by the crista terminalis to the AV node. Ablation was successful in all patients and no patient developed complete heart block. Incidental dual AV nodal function was eliminated in 3 of 4 patients. Pre- and post-ablation AV nodal function are as follows:

	PA	AH	HV	Ant ERP	Ant FRP	Ant Block	Ret Block
Pre RF	45 ± 10	84 ± 36	51 ± 9	337 ± 73	444 ± 61	365 ± 97	476 ± 178
PostRF	47 ± 11	87 ± 32	50 ± 9	321 ± 79	432 ± 62	354 ± 81	471 ± 179
p value	0.4	0.76	0.92	0.67	0.7	0.6	0.94

943-9 Is Atrial Flutter a Circus Movement Around the Tricuspid Ring? Observations in the Transplanted Heart

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Background: Atrial incision in the right atrium of transplanted heart may create a similar anatomical obstacle to the "Y" lesion model of atrial flutter. In 8 patients with atrial flutter in the donor heart we studied the right atrial activation sequence using the local electrograms recorded at three points as close as possible to the tricuspid ring, 1) the lateral right atrium (LRA), 2) interatrial septum (IS) and 3) high right atrium (HRA). We also determined the conduction times between LRA and IS during Entrainment from LRA, LRA-IS(E), and between IS and LRA during entrainment from IS, IS-LRA(E). They were compared with the interval LRA-IS and IS-LRA measured during flutter. The electrogram activation sequence was clockwise in all cases LRA-IS-HRA. Entrainment from LRA and IS reproduced exactly the flutter activation sequence and the local electrogram morphology. During entrainment from LRA, LRA-IS(E) was similar to LRA-IS (155 ± 34 vs 146 ± 33 msec, $r = 0.94$; $p < 0.0001$), the return cycle at the stimulation point was 210 ± 16 msec. During entrainment from IS the conduction time IS-LRA(E) and the interval IS-LRA were almost equal (59 ± 43 vs 53 ± 40 msec, $r = 0.98$; $p < 0.0001$), the return cycle at the stimulation point was 207 ± 21 msec. LRA-IS(E) plus IS-LRA(E) was similar to the flutter cycle length (215 ± 15 vs 200 ± 19, $r = 0.93$, $p < 0.0001$.

Conclusions. The similarity between the conduction times from LRA to IS and from IS to LRA and the flutter intervals LRA-IS and IS-LRA suggest that these points belong to the flutter circuit. Also the return cycle at the stimulation point during entrainment from both sites, LRA and IS, was similar to the flutter cycle length. These observations may best be explained by a macroreëntry around the tricuspid ring.

943-10 Excellent Long-term Outcome of DC Electrical Cardioversion in Patients with Atrial Flutter

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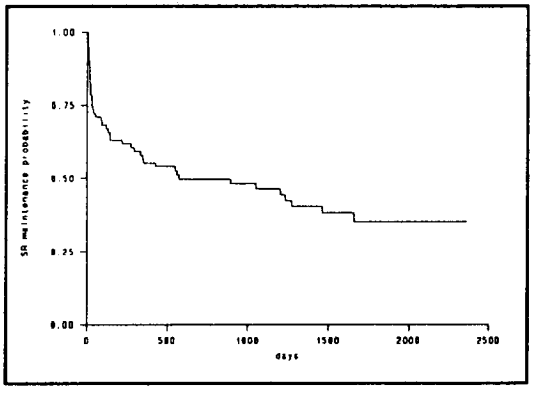
The aim of the present study was to investigate long-term outcome in patients with chronic atrial flutter (AFL) who underwent at least one DC electrical cardioversion (ECV) and who were treated with an intention-to-maintain sinus rhythm (SR). Included were 83 patients, 37% suffered from coronary artery disease, 27% from valvular disease, 20% from congenital heart disease, 6% from hypertension, and 10% had 'lone' AFL. Mean age was 55 ± 15 years. Median previous arrhythmia history was 3 months. Mean echocardiographic long axis left atrial size was 45 ± 9 mm. ECV was successful in 81 patients (99%). After AFL recurrence prophylactic antiarrhythmic drugs were instituted after re-ECV according to a stepped care approach, first sotalol followed by a Class IC and as last resort amiodarone. Mean follow-up was 4 ± 1 years.

Life table analysis showed that after 2 years 50% of the patients were in SR after 1 ECV (figure). After 2 ± 1 ECVs 82% was in SR at the end of follow-up. Multivariate analysis revealed that the only parameter related to maintenance of SR was the left ventricular end-systolic diameter ($p = 0.03$).



Conclusion: patients with AFL show excellent long-term maintenance of SR. These data indicate that ECV is the therapy of choice in AFL patients. RF ablation of AFL should be kept as last resort therapy.

943-11 Endocardial Activation Mapping of the Area Posterior to the Coronary Sinus Ostium in Type 1 Atrial Flutter

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The most frequently proposed targets for catheter ablation of atrial flutter (AFl) have been (1) the Inferior Vena Cava (IVC)-Tricuspid Ring (TR), (2) the Coronary Sinus Ostium (CSOs)-TR and (3) the IVC-CSOs Isthmuses. (2) would imply that no essential wavefront crosses (3) during AFl. To investigate this point, a special steerable decapolar catheter (Ca) for precise (1 mm interelectrode spacing) mapping of this area was inserted during the mapping procedure in 7 patients (Pts) referred for radiofrequency (RF) ablation of type I AFl. Ca was manipulated in order to record the IVC-CSOs isthmus. This was divided in postero (P)superior, P.medial and P.inferior region of CSOs. These were 6 males and 1 female (mean age = 46 yr) with a mean AF cycle length